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SUPPLEMENT to MR. EDGEWORTH's ESSAY
upon the TELEGRAPH.

SINCE the Royal Irish Academy did me the honour to accept of my essay on the telegraph, I have made material improvements in its construction, which I think it my duty to communicate.

Read Dec. 3,
 1796.

IN September 1796, the Lord Lieutenant ordered me to prepare telegraphs for an experiment before his Excellency. In consequence I constructed four new telegraphs—I had found that the large machines thirty feet high, with which my sons talked in September 1794 across the channel, between Ireland and Scotland, were liable to accidents in stormy weather: my first consideration therefore was to contrive some means of furling their canvas when they were not in use; and from the rigging of ships it was obvious that cordage was for this purpose preferable to inflexible braces of wood. I therefore adopted the following construction:

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A. (fig. 4.)

A. (fig. 4.) A hollow axle-tree, made in separate pieces, hooped together in the form of a double truncated cone, on the middle of which is fastened a wheel of wood (b. fig. 4.) with eight notches cut out (a. fig. 4.) to receive eight ribs (r. r. r. r. r. r. r. r. fig. 1. and 2.) These ribs turning on a strong iron ring, that up like the ribs of an umbrella, and are raised and adjusted by cords passing through eight holes in the flanches or shoulders (F. fig. 1. 4.) These flanches, and those at (f. fig. 2. and 4.) serve to keep the machine in its place upon the stands which support it (fig. 2.) the cords are striped and fastened like the cords of a tent (c. c. &c. fig. 2.)

WHERE permanent buildings are not required, supports for these machines may be constructed in the following manner: Two stands, each of them made of two pieces of wood simply bolted together as (fig. 3.) must be erected, and held steady by means of cords (c. c.) fastened to common tent pegs as in (fig. 2. P. P. P.) When the machines are large, small piles should be used instead of pegs, and running tackle (t.) should be used both for the cords of the pointers and the stands. A number of minute circumstances should be attended to in the construction and use of these machines; but I do not think it proper to detail them to this Academy; they should appear in a different place (o).

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(a) Formerly in France every engineer, who conducted any public work, was obliged to lodge in a public office exact drawings with minute descriptions of every part of and process of his operations. Numberless small improvements in workmanship

BESIDES rendering the telegraph safe against storms, and more easily manageable, I found by experience that one machine could be made to perform the same effect as four, with but little loss of time ; what took up four minutes with four pointers can be conveyed in five minutes by one. I have also found, that by answering each signal or number shewn at every station, all possibility of mistake is avoided.

I BELIEVE that in other establishments of this sort it has been found that thick and foggy weather has occasioned more interruptions than were expected. With my telegraphs I have good reason to assert that there do not commonly occur above eight or ten days in the year when intelligence might not be conveyed by land.

IF eight men were posted at each permanent station, at the distance of eighteen or twenty English miles asunder, with machines of twenty-five feet high, in hazy weather, they might detach two men with portable telegraphs to the distance of about six miles from each station, who with eight foot telegraphs could keep up a regular communication.

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manship and tools were preserved by these means, and by degrees were collected into publications of general circulation.

I was required to deliver drawings of all the machinery I employed in the work carried on at Lyons in 1772 for turning the course of the Rhone.

But in the transactions of a literary society such details would be tedious and improper.

THE portable telegraph resembles that which I have described. It differs only in two circumstances; for convenience, as it is small and does not oppose much surface to the wind, it may be defended with ribs of wood instead of cords.

THE portable telegraph which my son had the honour of shewing to His Royal Highnes^s the Duke of York in Kensington Gardens in October last, was furnished with filken cords, on purpose to shew how my larger telegraphs were constructed; but it was intended merely for reconnoitring near an army, and was only six feet high.

IN the essay which the Academy has already received I said that imitations without end might be made of my telegraph. Every index or pointer that moves circularly, dividing an imaginary circle into parts and denoting figures or signs that correspond with a vocabulary, is founded on the same principle as mine. The French have laid aside their former clumsy apparatus, and have constructed a telegraph on these principles; and the admiralty in England have as I am informed very lately done the same.

THE first pointers I employed in 1767 were wind-mill sails. I then tried indexes of the shape (fig. 5.) Fig. 8. A pointer like a sword-cutler's sign was recommended to me by a member of the Academy, as a second or additional hand to move on the same

same center as the principal hand. But a triangle, whose base is equal to half its side, is of all the figures I have tried the most distinct.

THE night-telegraph remains still to be described; its uses are perhaps more extensive than those of the telegraphs I have already published; and I propose to make it the subject of another paper upon a future occasion.

THE art of conveying swift and secret intelligence is not one of those inventions which attracts attention only by its novelty; on the contrary I am convinced that it will be thought more valuable the longer it has been submitted to the test of time and experience.